Preservation and Stewardship Hype Cycles

A Product of the Technology Infusion Working Group (TIWG) Data Stewardship Subgroup

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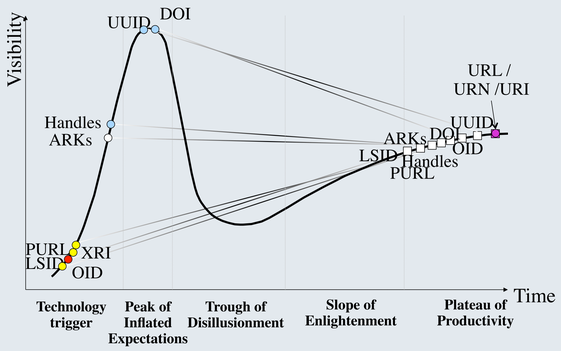
Gartner hype cycles were adapted to examine the use of preservation and stewardship technologies both within and external to the NASA Earth Science community

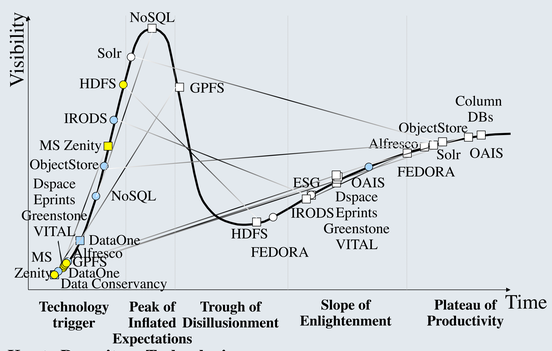
2011 Hype Cycle for Identifier Technologies



Key to Identifier Technologies:

- ARK - Archival Resource Key
- DOI - Digital Object Identifiers
- XRI - Extensible Resource Identifier
- LSID - Life Science ID
- OID - Object Identifiers
- PURL - Persistent Uniform Resource Locators
- UUID - Universally Unique Identifier

2011 Hype Cycle for Repository Technologies



Key to Repository Technologies:

- IRODS– Integrated Rule-Oriented Data System
- OAIS – Open Archives Information System
- FEDORA – Flexible Extensible Digital Object Repository Architecture,
- ESG – Earth System Grid
- HDFS – Hadoop File System
- GPFS – IBM General Parallel File System

Hype Cycle Phases[1]

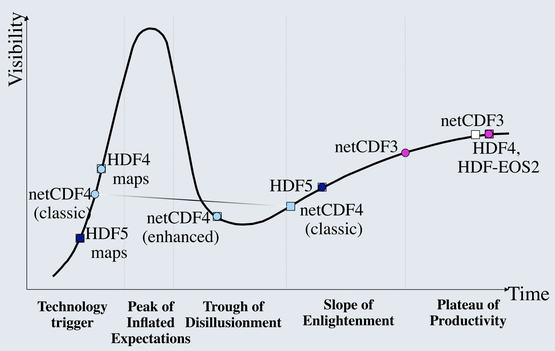
- **Technology Trigger** - The first phase of a Hype Cycle is the "technology trigger" or breakthrough, product launch or other event that generates significant press and interest.
- **Peak of Inflated Expectations** - In the next phase, a frenzy of publicity typically generates over-enthusiasm and unrealistic expectations. There may be some successful applications of a technology, but there are typically more failures.
- **Trough of Disillusionment** - Technologies enter the "trough of disillusionment" because they fail to meet expectations and quickly become unfashionable. Consequently, the press usually abandons the topic and the technology.
- **Slope of Enlightenment** - Although the press may have stopped covering the technology, some businesses continue through the "slope of enlightenment" and experiment to understand the benefits and practical application of the technology.
- **Plateau of Productivity** - A technology reaches the "plateau of productivity" as the benefits of it become widely demonstrated and accepted. The technology becomes increasingly stable and evolves in second and third generations. The final height of the plateau varies according to whether the technology is broadly applicable or benefits only a niche market

1. Wikipedia, 2011, http://en.wikipedia.org/wiki/Hype_cycle

Placement on the NASA Earth Science Hype Cycle

- Maturity
  - Technical completeness / operational readiness
  - 'Widespread' use in NASA production applications
- Visibility (examples)
  - References in conference presentations / papers
  - Number of press / journal articles
  - Inclusions in NASA proposals for funding
- Rate of progression
  - How to estimate projected rate of adoption?
- All of these as if they ended with “in NASA Earth Sciences”

2011 Hype Cycle for Data Formats



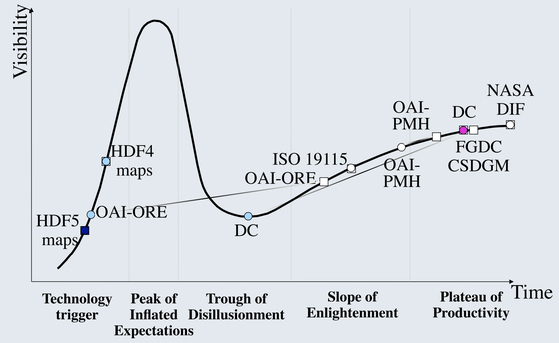
Where adopted:

- ☐ Adoption outside of NASA Earth Science
- ○ Adoption in NASA Earth Science

Estimated years to mainstream adoption

- ○ < 2 years
- ○ 2-5 years
- ● 5-10 years
- ● > 10 years
- ● Obsolete before plateau
- ● Deprecated

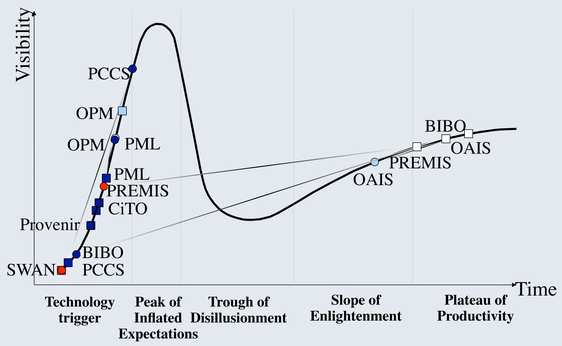
2011 Hype Cycle for Metadata Standards



Key to Metadata Standards:

- DC – Dublin Core
- DIF – Directory Interchange Format
- FGDC CSDGM – Federal Geospatial Data Committee’s Content Standard for Digital Geospatial Metadata
- HDF – Hierarchical Data Format
- OAI-PMH – Open Archives Initiative Protocol for Metadata Harvesting
- OAI-ORE – Open Archives Initiative Object Reuse and Exchange

2011 Hype Cycle for Data Stewardship Technologies



Key to Stewardship Technologies:

- BIBO – Bibliographic Ontology
- CiTO – Citation Typing Ontology
- OAIS – Open Archives Information System
- OPM – Open Provenance Model
- PCCS – Provenance and Context Content Standard
- PML – Proof (or sometimes Provenance) Markup Language
- PREMIS – Preservation Metadata Implementation Strategies
- Provenir – A reference ontology for modeling domain-specific provenance
- SWAN – Semantic Web Applications in Neuromedicine